WE CLAIM:

1. A circuit for analog-to-digital conversion, comprising:

a first pre-amplification circuit, comprising a plurality of amplifiers;

a second pre-amplification circuit, comprising another plurality of amplifiers, that is coupled to the first pre-amplification circuit;

a series of averaging resistors coupled between an output of each amplifier of the first pre-amplification circuit; and

a termination resistor circuit coupled between a terminal of a termination voltage source and an output of a first amplifier of the first pre-amplification circuit.

2. The circuit of Claim 1, further comprising an additional termination resistor circuit coupled between another terminal of the termination voltage source and an output of a last amplifier of the plurality of amplifiers.

3. The circuit of Claim 1, further comprising at least one additional pre-amplification circuit comprising yet another plurality of amplifiers and one additional associated series of averaging resistors coupled between an output of each amplifier of the additional pre-amplification circuit.

4. The circuit of Claim 1, wherein the termination resistor circuit further comprises a resistor with a predetermined temperature coefficient such that a temperature dependent increase in current flow to the output of the first amplifier is substantially reduced.

5. The circuit of Claim 4, wherein the termination resistor circuit further comprises at least two resistors arranged such that a total temperature coefficient provides substantial reduction of a temperature dependent increase in current flow to the output of the first amplifier.

6. The circuit of Claim 1, wherein a temperature coefficient of the termination resistor is predetermined such that a linearity of a transfer curve of the analog-to-digital conversion circuit is substantially stable over a temperature range.

7. The circuit of Claim 6, wherein the temperature range includes at least twenty-five degrees above a designated operating temperature and twenty-five degrees below the designated operating temperature of the analog-to-digital conversion circuit.

8. The circuit of Claim 1, further comprising a series of interpolation resistors coupled between an output of each amplifier of the second pre-amplification circuit at a second series of nodes, wherein at least three interpolation resistors are placed between any two amplifiers a comparator circuit, and wherein the second series of nodes are coupled to an input of a comparator in a comparator circuit is coupled to the second pre-amplification circuit at a predetermined ratio.

9. The circuit of Claim 8, wherein the predetermined ratio is three to one.

10. A circuit for analog-to-digital conversion, comprising:

a first pre-amplification circuit, comprising a plurality of amplifiers;

a second pre-amplification circuit, comprising a plurality of amplifiers, that is coupled to the first pre-amplification circuit;

a series of averaging resistors coupled between an output of each amplifier of the first pre-amplification circuit;

a second series of averaging resistors coupled between an output of each amplifier of the second pre-amplification circuit at a second series of nodes; and

a termination resistor circuit coupled between a terminal of a termination voltage source and an output of a first amplifier of the first pre-amplification circuit.

11. The circuit of Claim 10, further comprising:

a comparator circuit comprising a plurality of comparators, wherein an input of each comparator is coupled to a node in the second series of nodes.

12. The circuit of Claim 10, further comprising at least one additional pre-amplification circuit comprising a plurality of amplifiers and one additional associated series of averaging resistors coupled between an output of each amplifier of the additional pre-amplification circuit.

13. The circuit of Claim 12, further comprising at least one additional termination resistor circuit coupled to the output of the first and last amplifiers of the additional pre-amplification circuit, wherein the additional termination resistors are also coupled to the terminals of the termination voltage source.

14. The circuit of Claim 10, wherein a temperature coefficient of the termination resistor is selected such that a linearity of a transfer curve of the analog-to-digital conversion circuit is substantially stable over a temperature range.

15. The circuit of Claim 10, wherein a number of amplifiers in the pre-amplification circuit is determined by a desired resolution of an output digital signal.

16. The circuit of Claim 10, wherein the amplifiers comprise transistor pairs, each of the respective transistor pair further comprising a respective current source that is arranged to drive the pair.

17. The circuit of Claim 16, wherein the transistor pairs further comprise at least one of a BJT transistor pair, a FET transistor pair, and a CMOS transistor pair.

18. A method for improving temperature stability of an analog-to-digital conversion circuit, the method comprising:

providing at least one termination resistor coupled between a terminal of a termination voltage source and an output of a first amplifier of a pre-amplification circuit of the analog-to-digital conversion circuit; and

providing at least another termination resistor coupled between another terminal of the termination voltage source and an output of a last amplifier of the pre-amplification circuit of the analog-to-digital conversion circuit.

19. The method of Claim 18, wherein a temperature coefficient of the termination resistor is selected such that a linearity of a transfer curve of the analog-to-digital conversion circuit is substantially stable over a temperature range.

20. A method for determining a digital value of an analog signal, the method comprising:

receiving an analog signal through an input of an amplifier in a first pre-amplification circuit;

forwarding the signal to a second pre-amplification circuit, further comprising the steps of:

averaging an output of the first pre-amplification circuit by coupling averaging resistors between outputs of the amplifiers of the first pre-amplification circuit, and

substantially stabilizing a linearity of the first pre-amplification circuit by coupling at least one termination resistor to an output of a first and a last amplifier of the pre-amplification circuit, wherein the termination resistors are also coupled to terminals of a termination voltage source; and

performing a comparison on the pre-amplified analog signal in a comparator circuit that is coupled to the second pre-amplification circuit.

21. A circuit with an analog-to-digital conversion architecture, comprising:

means for providing a first pre-amplification comprising a plurality of amplifying means;

means for providing a second pre-amplification with a folding analog-to-digital converter architecture comprising a plurality of amplifying means;

means for providing averaging between outputs of each amplifying means in the first pre-amplification means at a first series of nodes;

means for providing a termination load between a terminal of a termination voltage means and an output of a first amplifying means of the first pre-amplification means;

means for providing a termination load between another terminal of a termination voltage means and an output of a last amplifying means of the first pre-amplification means; and

means for comparing to convert analog signal to digital signal, coupled to an output of the second pre-amplification means.